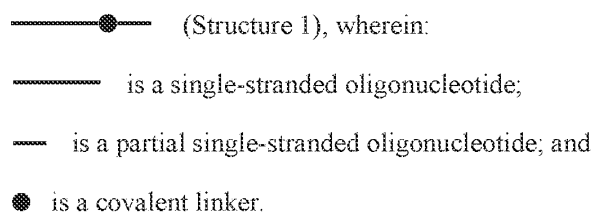
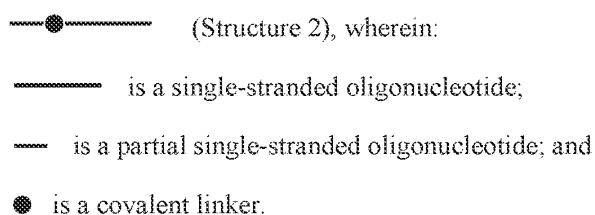


WHAT IS CLAIMED IS:

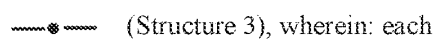
1. A multimeric oligonucleotide comprising subunits, wherein:
each of the subunits independently comprises a single-stranded or double-stranded oligonucleotide; each of the subunits is joined to another subunit by a covalent linker; and at least one subunit comprises at least one partial single-stranded oligonucleotide.
2. The multimeric oligonucleotide of claim 1, wherein at least one subunit comprises two partial single-stranded oligonucleotides annealed to a complementary strand to form a double-stranded subunit.
3. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 1:



4. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 2:



5. A multimeric oligonucleotide comprising Structure 3:



— is independently a partial single-stranded oligonucleotide; and

● is a covalent linker.

6. The multimeric oligonucleotide of claim 5, wherein Structure 3 is a homodimer.

7. The multimeric oligonucleotide of claim 5, wherein Structure 3 is a heterodimer.

8. The multimeric oligonucleotide of claim 1, wherein at least one subunit comprises Structure 4:

 (Structure 4), wherein:

each — is a partial single-stranded oligonucleotide;

● is a covalent linker joined to a partial single-stranded oligonucleotide and an adjoining oligonucleotide subunit; and

..... is a complementary strand.

9. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 5:

 (Structure 5), wherein:

each — is a single-stranded oligonucleotide;

each — is a partial single-stranded oligonucleotide;

each ● is a covalent linker joining a single-stranded oligonucleotide to a partial single-stranded oligonucleotide; and

..... is a complementary strand.

10. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 6:



(Structure 6)

wherein:

each --- is a single-stranded oligonucleotide;

each --- is a partial single-stranded oligonucleotide;

each $\bullet$ is a covalent linker joining adjacent oligonucleotides;

each --- is a complementary strand; and

each of a, b, c, d, e, f, g, h, i, j and k is independently an integer greater than or equal to zero,

with the proviso that at least one of c, e, h, and j is greater than or equal to 1.

11. The multimeric oligonucleotide of claim 10, wherein each of a, b, c, d, e, f, g, h, i, j and k is independently an integer in the range of 0 to 10, with the proviso that at least one of c, e, h and j is greater than or equal to 1.

12. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 7:



(Structure 7), wherein:

--- are each a single-stranded oligonucleotide;

--- are each a complementary strand;

--- are each a partial single-stranded oligonucleotide;

$\bullet$ are each a covalent linker;

m and n are each independently an integer greater than or equal to 1; and

o is an integer greater than or equal to 0.

13. The multimeric oligonucleotide of claim 12, wherein m and n are each independently an integer in the range of 1 to 10; and o is an integer in the range of 0 to 10.

14. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 8



wherein:

----- are each a single-stranded oligonucleotide;

----- are each a complementary strand;

----- are each a partial single-stranded oligonucleotide;

● are each covalent linkers; and

p and q are each independently an integer greater than or equal to zero.

15. The multimeric oligonucleotide of claim 14, wherein p and q are each independently an integer in the range of 0 to 10; or wherein p and q are each independently an integer in the range of 0 to 3.

16. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 9:



wherein:

----- are each a single-stranded oligonucleotide;

----- are each a complementary strand;

----- are each a partial single-stranded oligonucleotide;

● are each a covalent linker;

r is an integer greater than or equal to 1; and

s is an integer greater than or equal to 0.

17. The multimeric oligonucleotide of claim 16, wherein r is an integer in the range of 1 to 10 and s is an integer in the range of 0 to 10; or wherein r is an integer in the range of 1 to 3 and s is 0 or 1.

18. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 10:



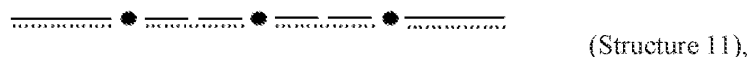
each  is a single-stranded oligonucleotide;

each  is a partial single-stranded oligonucleotide;

each  is a covalent linker joining adjacent oligonucleotides; and

each  is a complementary strand.

19. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 11:



wherein:

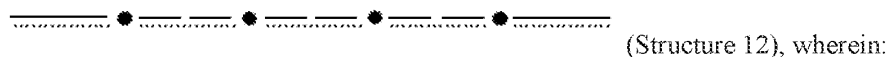
each  is a single-stranded oligonucleotide;

each  is a partial single-stranded oligonucleotide;

each  is a covalent linker joining adjacent oligonucleotides;

each  is a complementary strand.

20. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 12:



each  is a single-stranded oligonucleotide;

each  is a partial single-stranded oligonucleotide;

each  is a covalent linker joining adjacent oligonucleotides; and

each is a complementary strand.

21. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 13:



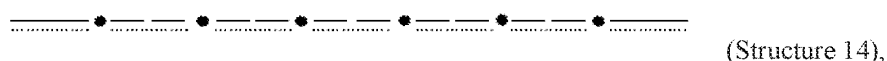
each — is a single-stranded oligonucleotide;

each — is a partial single-stranded oligonucleotide;

each ● is a covalent linker joining adjacent oligonucleotides; and

each is a complementary strand.

22. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 14:



wherein:

each — is a single-stranded oligonucleotide;

each — is a partial single-stranded oligonucleotide;

each ● is a covalent linker joining adjacent oligonucleotides; and

each is a complementary strand.

23. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 15:



wherein:

each — is a single-stranded oligonucleotide;

each — is a partial single-stranded oligonucleotide;

each ● is a covalent linker joining adjacent oligonucleotides; and

each is a complementary strand.

24. The multimeric oligonucleotide of claim 1, wherein the multimeric oligonucleotide comprises Structure 16:



wherein each

————— is a single-stranded oligonucleotide;

..... is a complementary strand;

——— is a partial single-stranded oligonucleotide;

● is a covalent linker; and

t and u are each independently an integer greater than or equal to 0 with the proviso that at least one of t and u are an integer greater than or equal to 1.

25. The multimeric oligonucleotide of claim 24, wherein t and u are each independently an integer in the range of 0 to 10 with the proviso that at least one of t and u are an integer greater than or equal to 1; or wherein t and u are each independently an integer in the range of 0 to 3 with the proviso that at least one of t and u are an integer greater than or equal to 1.

26. The multimeric oligonucleotide of any of claims 1-25, wherein each partial single-stranded oligonucleotide is 5-14 nucleotides in length.

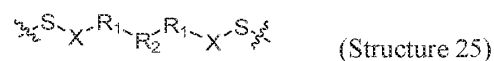
27. The multimeric oligonucleotide of any of claims 1-26, wherein at least two subunits are active against different cellular targets.

28. The multimeric oligonucleotide of claim 27, wherein all of the subunits are active against different cellular targets.

29. The multimeric oligonucleotide of any of claims 1-26, wherein at least two subunits are active against the same cellular target.

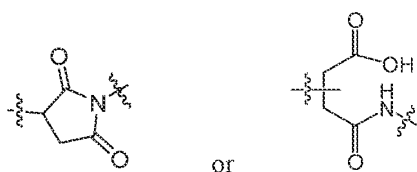
30. The multimeric oligonucleotide of claim 29, wherein all of the subunits are active against different cellular targets.
31. The multimeric oligonucleotide of any of claims 1-30, wherein the multimeric oligonucleotide comprises four or more subunits.
32. The multimeric oligonucleotide of claim 31, wherein the multimeric oligonucleotide comprises four, five, six, seven, eight, nine, or ten subunits.
33. The multimeric oligonucleotide of any of claims 1-32, wherein each nucleic acid in the multimeric oligonucleotide is RNA, DNA, or an artificial or non-natural nucleic acid analog.
34. The multimeric oligonucleotide of any of claims 1-33, wherein at least one subunit is siRNA, saRNA, or miRNA.
35. The multimeric oligonucleotide of claim 34, wherein all of the subunits are siRNA.
36. The multimeric oligonucleotide of claim 34, wherein all of the subunits are saRNA.
37. The multimeric oligonucleotide of claim 34, wherein all of the subunits are miRNA.
38. The multimeric oligonucleotide of any of claims 1-33, wherein at least one subunit is a single-stranded subunit.
39. The multimeric oligonucleotide of claim 38, wherein the at least one single-stranded subunit is an antisense oligonucleotide.
40. The multimeric oligonucleotide of any one of claims 1-39, wherein at least one covalent linker • is a cleavable covalent linker.

41. The multimeric oligonucleotide of claim 40, wherein the cleavable covalent linker comprises an acid cleavable bond, a reductant cleavable bond, a bio-cleavable bond, or an enzyme cleavable bond.
42. The multimeric oligonucleotide of claim 40 or 41, wherein the cleavable covalent linker is cleavable under intracellular conditions.
43. The multimeric oligonucleotide of any of claims 1-42, wherein each covalent linker is, independently, a disulfide bond or a compound of Structure 25:

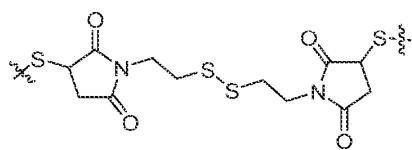


wherein:

- S is attached by a covalent bond or by a linker to an oligonucleotide subunit;
 each R₁ is independently a C₂-C₁₀ alkyl, C₂-C₁₀ alkoxy, or C₁-C₁₀ aryl group;
 R₂ is a thiopropionate or disulfide group; and
 each X is independently selected from:

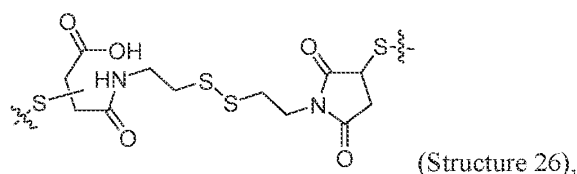


44. The multimeric oligonucleotide of claim 43, wherein the compound of Structure 25 is



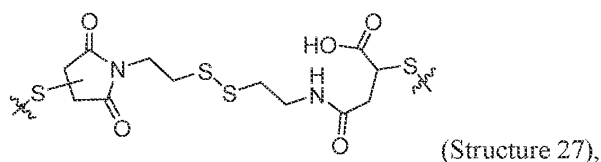
wherein each terminal S is attached by a covalent bond or by a linker to an oligonucleotide subunit.

45. The multimeric oligonucleotide of claim 43, wherein the compound of Structure 25 is a compound according to Structure 26:



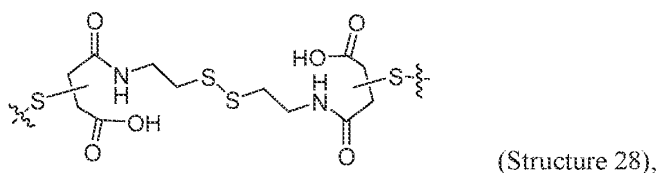
wherein each terminal S is attached by a covalent bond or by a linker to an oligonucleotide subunit.

46. The multimeric oligonucleotide of claim 43, wherein the compound of Structure 25 is a compound according to Structure 27:



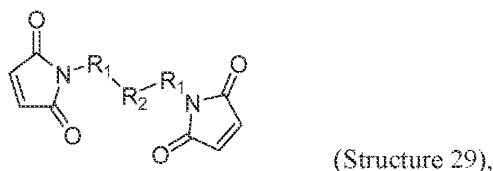
wherein each terminal S is attached by a covalent bond or by a linker to an oligonucleotide subunit.

47. The multimeric oligonucleotide of claim 43, wherein the compound of Structure 25 is a compound according to Structure 28:



wherein each terminal S is attached by a covalent bond or by a linker to an oligonucleotide subunit.

48. The multimeric oligonucleotide any of claims 43-47, wherein the covalent linker of Structure 25 is formed from a covalent linker precursor according to Structure 29:



wherein each R₁ is independently a C₂-C₁₀ alkyl, C₂-C₁₀ alkoxy, or C₁-C₁₀ aryl group; and

R₂ is a thiopropionate or disulfide group.

49. The multimeric oligonucleotide of any of claims 1-48, wherein at least one covalent linker is attached to the 3' or 5' terminus of an oligonucleotide subunit.
50. The multimeric oligonucleotide of claim 49, wherein all covalent linkers are attached to the 3' or 5' terminus of an oligonucleotide subunit.
51. The multimeric oligonucleotide of any of claims 1-49, wherein at least one covalent linker is attached to an internal nucleotide of an oligonucleotide subunit.
52. The multimeric oligonucleotide of any of claims 1-51, wherein at least one covalent linker * comprises a nucleotide linker.
53. The multimeric oligonucleotide of claim 52, wherein the nucleotide linker is between 2-6 nucleotides in length.
54. The multimeric oligonucleotide of any of claims 1-53, wherein each covalent linker * is the same.
55. The multimeric oligonucleotide of any of claims 1-53, wherein at least one covalent linker * is different from the other covalent linkers.
56. The multimeric oligonucleotide of any of claims 1-55, at least two subunits are joined by a covalent linker * between the 3' end of a first subunit and the 3' of a second subunit.
57. The multimeric oligonucleotide of any of claims 1-56, wherein at least two subunits are joined by a covalent linker * between the 5' end of a first subunit and the 3' of a second subunit.

58. The multimeric oligonucleotide as in any of claims 1-57, wherein at least two subunits are joined by a covalent linker • between the 5' end of a first subunit and the 5' of a second subunit.

59. The multimeric oligonucleotide of any of claims 1-58, further comprising a chemical or biological moiety that is not an oligonucleotide.

60. The multimeric oligonucleotide as in any of claims 1-59, wherein the multimeric oligonucleotide is at least 75, 80, 85, 90, 95, 96, 97, 98, 99, or 100% pure.

61. A method of synthesizing a multimeric oligonucleotide comprising Structure 16:



wherein each ————— is an single-stranded oligonucleotide, each ——— is a partial single-stranded oligonucleotide, each is a complementary strand; each • is a covalent linker joining adjacent oligonucleotides, and t and u are each independently an integer greater than or equal to 1;

the method comprising annealing Structure 17

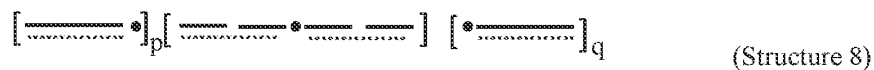


and Structure 18



with complementary strands, thereby forming Structure 16.

62. A method of synthesizing a multimeric oligonucleotide comprising Structure 8:



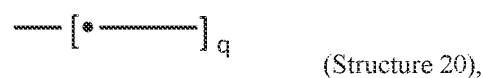
wherein each ————— is a single-stranded oligonucleotide, each ——— is a partial single-stranded

oligonucleotide, each is a complementary strand; each • is a covalent linker joining adjacent oligonucleotides, and p and q are each independently an integer greater than or equal to 1;

the method comprising annealing Structure 19,



Structure 20,

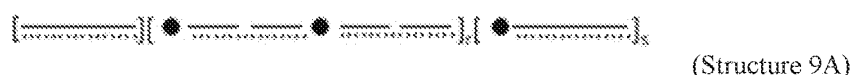


and one or more of Structure 21,



with complementary strands , thereby forming Structure 8.

63. A method of synthesizing a multimeric oligonucleotide comprising Structure 9A:



wherein each --- is a single-stranded oligonucleotide, each --- is a partial single-stranded oligonucleotide, each is a complementary strand; each • is a covalent linker joining adjacent oligonucleotides; and r and s are each independently an integer greater than or equal to 1;

the method comprising annealing Structure 22



and Structure 23



and one or more of Structure 24



with complementary strands , thereby forming Structure 9A.

64. A method of synthesizing a multimeric oligonucleotide comprising Structure 9B:



wherein each ————— is a single-stranded oligonucleotide; each is a partial single-stranded oligonucleotide; each is a complementary strand; each • is a covalent linker joining adjacent oligonucleotides; and r is an integer greater than or equal to 1;

the method comprising annealing Structure 22,



and one or more of Structure 24



and a partial single-stranded oligonucleotide with complementary strands,

thereby forming Structure 9B.

65. A composition comprising the multimeric oligonucleotide of any of claims 1-60 and a pharmaceutically acceptable excipient.

66. A composition comprising the multimeric oligonucleotide of any of claims 1-60 for use in the manufacture of a medicament.

67. A method for treating a subject comprising administering to the subject an effective amount of the multimeric oligonucleotide of any of claims 1-60.